

IN THE CLAIMS:

1. (Currently Amended) An insulating film measuring device for evaluating properties of an insulating film, the insulating film measuring device comprising:

an ion irradiating unit ~~operable~~ configured to irradiate the insulating film with ions; [[and]]

5 a voltage applying unit configured to apply a negative voltage to the insulating film during ion irradiation; and

a spectrum measurement unit ~~operable~~ configured to measure a spectrum of secondary electrons emitted from the insulating film during ion irradiation.

2. (Original) The insulating film measuring device of Claim 1,

wherein the spectrum measurement unit measures, over time, the spectrum of secondary electrons emitted from the insulating film.

3. (Currently Amended) An insulating film evaluating device comprising:

5 the insulating film measuring device of Claim 2; and

a variation detection unit ~~operable~~ configured to detect, based on a secondary electron spectrum measurement result measured over time by the spectrum measurement unit, at least one of an amount of variation of a rise position of a peak due to kinetic emission of secondary electrons and a rate of variation of the rise position.

4. (Currently Amended) An insulating film evaluating device comprising:

the insulating film measuring device of Claim 2; and

a variation detection unit ~~operable~~ configured to detect, based on a secondary electron spectrum measurement result measured over time by the spectrum measurement unit, variation in a peak appearing at a lower energy level than the peak due to kinetic emission of secondary electrons.

5. (Currently Amended) An insulating film measuring device for evaluating properties of an insulating film, the insulating film measuring device comprising:

an ion irradiation unit ~~operable~~ configured to irradiate the insulating film with ions; and

5 a spectrum measurement unit ~~operable~~ configured to measure a spectrum of secondary electrons emitted from the insulating film after ion irradiation has stopped.

6. (Currently Amended) The insulating film measuring device of Claim 5, wherein the spectrum measuring ~~device~~ unit measures, over time, the spectrum of secondary electrons emitted from the insulating film.

7. (Currently Amended) An insulating film evaluating device comprising:

the insulating film measuring device of Claim 5; and

an intensity detection unit ~~operable~~ configured to detect, based on a spectrum measured by the spectrum measurement unit, an intensity of a peak appearing at a lower energy level than a peak due to kinetic emission of secondary electrons.

8. (Currently Amended) An insulation film evaluating device comprising:

the insulating film measuring ~~device~~ unit of Claim 6; and

a variation detection unit ~~operable~~ configured to detect variation in a peak appearing at a lower energy level than the peak due to kinetic emission of secondary electrons.

9. (Currently Amended) An insulating film measuring device for evaluating insulating film properties, the insulating film measuring device comprising:

an ion irradiation unit ~~operable~~ configured to irradiate the insulating film with ions; and

5 a spectrum measurement unit ~~operable~~ configured to [[a]] measure while a negative voltage is being applied to the insulating film, a spectrum of secondary electrons emitted from the insulating film during ion irradiation and after the ion irradiation has stopped.

10. (Currently Amended) An insulation film evaluating device comprising:

the insulating film measuring device of Claim 9; and

5 a determining unit ~~operable~~ configured to determine, after ion irradiation has stopped, based on the spectrum measured by the spectrum measurement unit, an energy difference between a first peak due to kinetic emission of secondary electrons measured during ion irradiation and a second peak appearing at a lower energy level than the first peak.

11.-12. (Cancelled)

13. (Currently Amended) An insulating film measuring method used for evaluating properties of an insulating film, the insulating film measuring method comprising:

an ion irradiation step of irradiating the insulating film with ions; and

a spectrum measurement step of measuring, at least one of during and after the
5 ion irradiation, a spectrum of secondary electrons emitted from the insulating film while a negative voltage is applied to the insulating film.

14. (Original) An insulating film evaluating method including a density of states measurement step of measuring, based on the spectrum measured in the insulating film measuring method of Claim 13, the electron density of states in valence bands of the insulating film.

15.-25. (Cancelled)

26. (Previously Presented) The insulating film measuring device of Claim 1 wherein the insulating film is mounted on a conductive substrate and further includes means for applying a negative voltage to the conductive substrate during the measurement of the spectrum of secondary electrons.

27. (Previously Presented) The insulating film measuring device of Claim 26 further including means for applying a vacuum to the insulating film during the measurement of the spectrum of secondary electrons.

28. (Previously Presented) The insulating film measuring device of Claim 27 wherein the insulating film is MgO.

29. (Previously Presented) The insulating film measuring device of Claim 27 further including a variation detection unit connected to the spectrum measurement unit to measure a conveyance time, T_1 and a shift amount ΔE , wherein conveyance time, T_1 , is a time period from

starting an irradiation measurement to convergence of a rise position of a subsequent
5 measurement and ΔE is the amount of energy, eV, during T_1 .

30. (Previously Presented) The insulating film measuring device of Claim 27
wherein the ion irradiating unit irradiates argon ions.

31. (Previously Presented) The insulating film measuring device of Claim 27 further
including means for measuring a shape of low energy level secondary electron peaks in one of
during ion irradiation and after ion irradiation wherein intensity, position and shape of the low
energy level secondary electron peaks correlated with a capability of the insulating film to emit
5 secondary electrons.

32. (New) A measurement system for evaluating the potential performance of a
protection layer on a plasma display panel (PDP) substrate comprising:

means for mounting the PDP substrate with a protective layer exposed on a
surface of the PDP substrate;

5 an ion irradiating unit irradiating the protective layer with ions, at the means for
mounting;

means for measuring the secondary electrons emitted from the protective layer to
provide an output value; and

means for comparing the output value with a predetermined threshold value to
10 enable an adjustment in a formation of the protective layer.

33. (New) The measurement system of Claim 32 wherein the means for measurement includes measuring an amount of variation of a rise position of a voltage peak due to kinetic emission of secondary electrons and measuring a rate of variation of the rise position.

34. (New) The measurement system of Claim 32 wherein the means for measurement includes measuring an amount of variation of a voltage peak appearing at a lower energy level than a voltage peak due to kinetic emission of secondary electrons.

35. (New) The measurement system of Claim 34 wherein the means for measuring the secondary electrons is enabled to measure the secondary electrons emitted after the ion irradiating unit has ceased irradiating the protective layer with ions.